

WHAT IS CLAIMED IS:

1. A method of manufacturing a laterally diffused metal

2 oxide semiconductor (LDMOS) device, comprising:

3 forming a lightly-doped source/drain region with a first

4 dopant, the lightly-doped source/drain region located between

5 first and second isolation structures; and

6 creating a gate over the lightly-doped source/drain region.

2. The method as recited in Claim 1 wherein forming includes

3 forming a lightly-doped source/drain region with a first N-type

dopant.

3. The method as recited in Claim 2 wherein the first N-type

2 dopant has an implant dose ranging from about 1E12 atoms/cm<sup>2</sup> to

3 about 1E13 atoms/cm<sup>2</sup>.

4. The method as recited in Claim 3 wherein the first N-type

2 dopant has an implant dose of about 5E12 atoms/cm<sup>2</sup>.

5. The method as recited in Claim 1 further including

2 diffusing a second dopant at least partially across the lightly-

3 doped source/drain region and under the gate to form a first  
4 portion of a channel.

6. The method as recited in Claim 5 wherein diffusing the  
2 second dopant includes diffusing a second P-type dopant having an  
3 implant dose ranging from about  $1E13$  atoms/cm $^2$  to about  $1E14$   
4 atoms/cm $^2$ .

7. The method as recited in Claim 5 wherein diffusing the  
2 second dopant includes diffusing a second P-type dopant having an  
3 implant dose about 100 times higher than an implant dose of the  
4 first dopant.

8. The method as recited in Claim 5 further including  
2 placing a heavy concentration of the first dopant in a region  
3 adjacent a source side of the gate, and in the lightly-doped  
4 source/drain region adjacent a drain side of the gate.

9. The method as recited in Claim 8 wherein placing includes  
2 placing the heavy concentration of the first dopant in the lightly-  
3 doped source/drain region a distance ranging from about 2000 nm to  
4 about 3000 nm from the drain side of the gate.

10. The method as recited in Claim 8 wherein placing includes  
2 placing an implant dose of the first dopant ranging from about 1E15  
3 atoms/cm<sup>2</sup> to about 1E16 atoms/cm<sup>2</sup>.

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11. A method of manufacturing an integrated circuit,  
2 comprising:

3 fabricating laterally diffused metal oxide semiconductor  
4 (LDMOS) transistors, including:

5 forming a lightly-doped source/drain region with a first  
6 dopant, the lightly-doped source/drain region located between  
7 first and second isolation structures; and

8 creating a gate over the lightly-doped source/drain  
9 region;

10 depositing interlevel dielectric layers over the LDMOS  
11 transistors; and

12 creating interconnect structures in the interlevel dielectric  
13 layers and interconnecting the LDMOS transistors to form an  
14 operative-integrated circuit.

12. The method as recited in Claim 11 wherein forming  
1 includes forming a lightly-doped source/drain region with a first  
2 N-type dopant.

13. The method as recited in Claim 12 wherein the first N-  
2 type dopant has an implant dose ranging from about 1E12 atoms/cm<sup>2</sup>  
3 to about 1E13 atoms/cm<sup>2</sup>.

14. The method as recited in Claim 13 wherein the first N-type dopant has an implant dose of about 5E12 atoms/cm<sup>2</sup>.

15. The method as recited in Claim 11 further including diffusing a second dopant at least partially across the lightly-doped source/drain region and under the gate to form a first portion of a channel.

16. The method as recited in Claim 15 wherein diffusing the second dopant includes diffusing a second P-type dopant having an implant dose ranging from about 1E13 atoms/cm<sup>2</sup> to about 1E14 atoms/cm<sup>2</sup>.

17. The method as recited in Claim 15 wherein diffusing the second dopant includes diffusing a second P-type having an implant dose about 100 times higher than an implant dose of the first dopant.

18. The method as recited in Claim 15 further including placing a heavy concentration of the first dopant in a region adjacent a source side of the gate, and in the lightly-doped source/drain region adjacent a drain side of the gate.

19. The method as recited in Claim 18 wherein placing  
2 includes placing the heavy concentration of the first dopant in the  
3 lightly-doped source/drain region a distance ranging from about  
4 2000 nm to about 3000 nm from the drain side of the gate.

20. The method as recited in Claim 18 wherein placing  
2 includes placing an implant dose of the first dopant ranging from  
3 about 1E15 atoms/cm<sup>2</sup> to about 1E16 atoms/cm<sup>2</sup>.